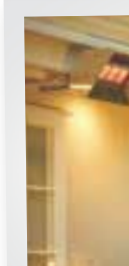
Rinnai

Specification guide

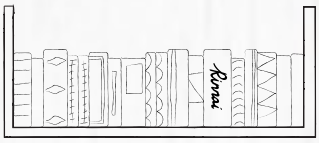
Heating



About this guide

This guide has been written to help you select and order the right Rinnai heating system and associated components for the right job. This information is not intended as an installation guide.

Rinnai is constantly improving its products, and as such, information and specifications are subject to change or variation without notice. For the most up-to-date information go to www.rinnai.co.nz.



For more information about buying, using, and servicing of Rinnai appliances call: 0800 RINNAI (0800 746 624)

Rinnai New Zealand Limited
105 Pavilion Drive, Mangere, Auckland
PO Box 53177, Auckland Airport, Auckland 2150

Phone: (09) 257 3800, Fax: (09) 257 3899
Email: info@rinnai.co.nz
Web: www.rinnai.co.nz, www.youtube.com/rinnainz
www.rinnaitraining.co.nz (installer training)
www.facebook.com/rinnainz

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Heating range

Rinnai provide fast and reliable heating. Hallmarks of our product range are precise temperature control and energy efficient heating.

Energysavers
These are fixed power flued heaters. Rinnai appliances flued via a power flue are approved by the sensitive choice programme of the Asthma Foundation.

Four models to choose from:
- Energysaver 309FT
- Energysaver 559FT
- Energysaver 561FT
- Energysaver 1004FTR

Portable Convectors
These are unflued portable gas heaters, which can be unplugged and moved from one gas wall or floor socket to another around the home, and can be tucked away in summer.

Two models to choose from:
- Avenger 671
- Dynamo 471

Super Rays
These are infra-red radiant heaters that are great for spot heating in large spaces. Unaffected by external air currents, the heat is channelled to specific areas.

Seven models to choose from:
- Indoor Super Ray 16*
- Indoor Super Ray 24*
- Indoor Super Ray 40*
- ODHRAD3M (outdoor)

* Choice of manual or electronic models

Rinnai iHeat® (RAHU20)
The Rinnai iHeat is a ducted home heating system that uses hot water from your Rinnai INFINITY® continuous flow gas hot water heater to warm air and circulate it around your home.

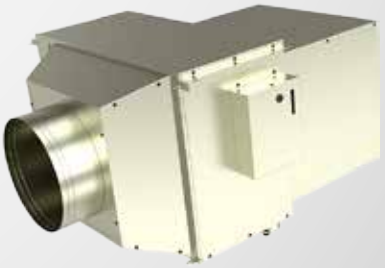
Refer to the product specification pages for each model to determine suitability.

Energysaver 559FT

Portable Convector Avenger

Outdoor Super Ray

Indoor Super Ray



Rinnai iHeat

Choosing the right type of heating

Considerations such as geographical location, room size, room insulation, running costs, and functionality versus aesthetics all play a part in choosing the right heating solution.

Geographical location
Where you live in New Zealand can determine the type of heating solution you choose. Use the diagram below to work out which climate zone you are in.

Room size
Consider the whole area you need to heat. This should include adjacent rooms through permanently open doorways and hallways.

A useful guide when calculating the size of heater you need is to measure the room volume in metres (length x width x height) and divide by 20 to get the kW rating of the appliance needed. If there are any heat loss factors you will need to increase the kW rating slightly to compensate.

Heat loss
Heat loss factors include:

- no ceiling or wall insulation
- no carpets on floors
- no curtains
- window area >15 m²
- ceiling height > 2.4 m²
- building on poles or piles

Also consider how good the insulation is in the building.

Running costs
Upfront purchase costs should be considered in conjunction with the ongoing running costs of a heating solution. To work out what these may be refer to appendix 1 on page 30.

Functionality vs. aesthetics
Additional considerations are based on functionality, the size and look of the heater, and where it is likely to be installed. For example are timers and a remote important, or is operating simplicity a key factor?

HEATING AREA (based on a standard ceiling height of 2.4 m)

	Warm zone	Medium zone	Cool Zone
Energysaver 309FT	45 m²	31 m²	26 m²
Energysaver 559FT	77 m²	53.5 m²	45.5 m²
Energysaver 561FT	70 m²	48 m²	41 m²
Energysaver 1004FTR	119 m²	82 m²	69 m²
Portable Convector Dynamo 471*	51.5 m²	45 m²	38 m²
Portable Convector Avenger 671*	95 m²	80 m²	70 m²
Indoor Super Ray 16**	19 m²	19 m²	19 m²
Indoor Super Ray 24**	28 m²	28 m²	28 m²
Indoor Super Ray 40**	47 m²	47 m²	47 m²
Outdoor Super Ray	23 m²	23 m²	23 m²
Rinnai iHeat	333 m²	285 m²	250 m²

* These heaters are subject to a minimum room size, refer specification pages for further detail

** The Indoor Super Ray heaters are for commercial and industrial use only

Location considerations

The following general guidelines should be factored when deciding on where to position a Rinnai heating solution.

Clearances
All Rinnai appliances are subject to clearances. Examples for the Energysaver 559FT and Portable Convectors are shown on this page. For additional clearance details, refer to the specific product pages in this guide.

Fixed ventilation
Rinnai Portable Convectors and Indoor Super Ray heaters (unflued appliances) draw the air for combustion from the room, so there is a need for adequate ventilation. This ventilation must be provided as per the Gas Regulations—the gasfitter installing the heater is responsible for this.

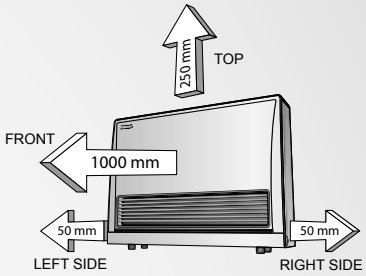
Suitability
It is important to review the suitability statements for each heating solution, for example; Indoor Super Rays are only suitable for commercial and industrial use and Portable Convectors are subject to minimum room sizes. Portable Convectors also cannot be installed in a bedroom, bathroom, toilet, sauna, spa room, or hallway. For further information, refer to each of the product specification pages in this guide.

Electrical connection

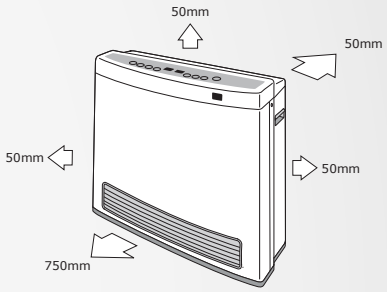
All Rinnai heating solutions require electricity to operate (except the Indoor Super Ray manual models). Consideration must be made as to where the power point can be positioned.
A 3-pin plug with a 1500 mm power cord is supplied with all Rinnai appliances. This must be plugged into a dedicated 230 V 10 A earthed power point. Power boards and double adaptors must not be used.

Flooring
Heat emanating from the front of Rinnai Energysavers and Portable Convectors may over time affect the appearance of some materials used for flooring such as carpet, vinyl, cork or timber. This effect may be amplified if the air in the room contains cooking vapours or cigarette smoke. To avoid this occurring a mat or rug may need to be positioned in front of the appliance—extending about one metre in front of it.

Super Ray positioning
Super Ray heaters direct their heat via infra-red rays, which discharge the heat energy upon striking a surface. They do not pass through solid materials. From a heating and safety point of view obstructions to the path of the rays must be taken into consideration.



Energysaver 559FT clearances



Portable Convector clearances

Rinnai iHeat®: Determining suitability

Spending time in the planning stages and discussing the heating requirements with the customer will ensure the correct system is specified and that the Rinnai iHeat can be successfully installed.

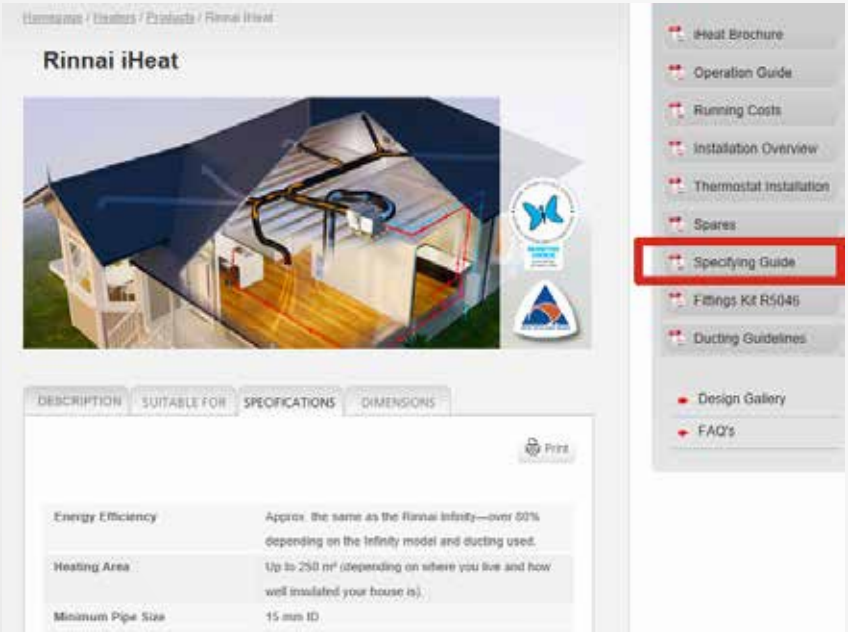
Prior to purchase
Prior to purchase of a Rinnai iHeat a customer site visit is required to cover off the following areas:

- Determining the current hot water system
  What hot water system currently exists at the property, where it is located, what is the static water pressure, and is water quality an issue?

- Addressing if a Rinnai iHeat system can be installed at the property
  Can the system be positioned in a location that meets the clearance and access requirements, and in a location where operating noise of the Rinnai INFINITY® gas got water heater and/or Rinnai iHeat won't be a nuisance? Can all the components of the system (ducting, ceiling diffusers, floor vents, thermostat, return air intake) be located in positions that allow effective operation of the central heating system? Is the manhole large enough for all the Rinnai iHeat components to fit through?

- Understanding customer expectations
  What does the customer need, want, and expect of the system? Is the Rinnai iHeat system, based on the site visit, a suitable heating solution for the customer?

For further information, refer to the Rinnai iHeat specifying guide available online at www.rinnai.co.nz—click on heaters and select iHeat. Rinnai also provides free online training for specifying, installing and commissioning the Rinnai iHeat. Refer to www.rinnaitraining.co.nz for further details.



Installation of a Rinnai iHeat - listed installers only
All installers (licensed plumbers) are required to have completed Rinnai's free online training before a Rinnai iHeat can be installed. This is important as the Rinnai iHeat warranty only applies to systems installed by listed installers—installers who have completed the Rinnai iHeat online specifying and installation courses. For listed installers refer to www.rinnnai.co.nz/iheatinstallers.html.

Rinnai heating solutions

Product specification pages

Energysavers

Rinnai Energysaver® codes

Gas Type	Energysaver 309FT	Energysaver 561FT	Energysaver 559FT	Energysaver 1004FTR
NG	RHF309FTWN	RHF561FTWN	RHF559FTWN	RHF1004FTRWN
LPG	RHF309FTWL	RHF561FTWL	RHF559FTWL	RHF1004FTRWL
Flueing	Flue is not supplied with the heater and must be ordered separately			Direct A flue supplied with heater

Description

High efficiency power flued convection heater (room sealed appliance) with programmable timers. Unit discharges a large volume of warm air, via bottom louvres, at a low level. This means the room heats quickly as warm air is directed out into the room and not straight up.

All Energysaver models are approved by the Asthma Foundations Sensitive Choice programme and comes with features that may reduce the likelihood of an allergic reaction for customers with asthma or allergies.

Suitability

309FT, 559FT, 561FT

Ideal for domestic applications. Suitable for living rooms, bedrooms, and open plan areas.

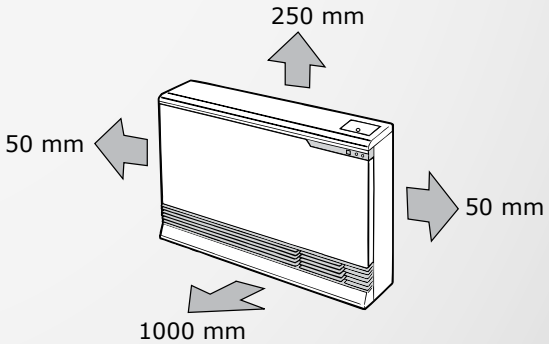
1004FTR

Ideal for commercial applications. Suitable for large open plan areas such as classrooms and churches.

Positioning considerations

When positioning the heater the main points governing location are flueing and warm air distribution. Energysavers also require electricity to operate (heater comes with a 1.5 m power cord). The power outlet MUST BE to the side of the heater and not above.

Energysavers must not be installed where curtains or other combustible materials could come into contact with it. In some cases curtains may need restraining. Energysavers are not designed to be built in and are subject to the clearances shown. While the image displayed is the 1004FTR, the clearances shown are the same for all Energysaver models.



Energysaver specification summary

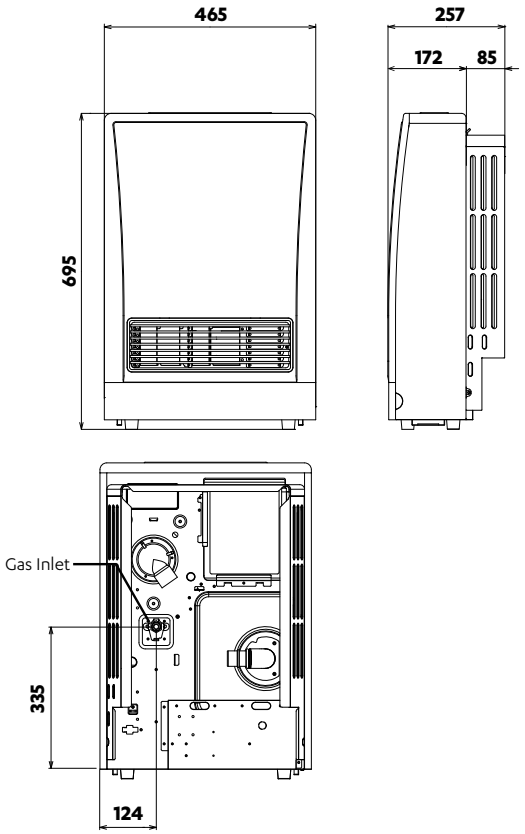
	Energysaver 309FT	Energysaver 561FT	Energysaver 559FT	Energysaver 1004FTR
Colour	White with grey louvres	White with grey louvres	White with grey louvres	White with grey louvres
Efficiency	80%	81.8%	79%	80%
Energy star rating	4.3 star energy equivalent	4.8 star energy equivalent	4.3 star energy equivalent	4.3 star energy equivalent
Features: **- locking** **- remote switch**	 No No	 No No	 No No	 Yes Yes*
Gas connection	15 mm BSP male thread	15 mm BSP male thread	15 mm BSP male thread	15 mm BSP male thread
Heating area: **- warm zone** **- medium zone** **- cool zone**	 45 m² 31 m² 26 m²	 70 m² 48 m² 41 m²	 77 m² 53.5 m² 45.5 m²	 119 m² 82 m² 69 m²
Input	5.8-13 MJ/h	9-21 MJ/h	9-23 MJ/h	11-37 MJ/h
Output**	1.2-3.1 kW	1.9-4.8 kW	1.9-5.3 kW	2.3-8.2 kW
Humidifier tray capacity	0.7 L	1.0 L	1.0 L	3.0 L
Noise level	31-38 dB(A)	34-42 dB(A)	33-42 dB(A)	37-47 dB(A)
Power consumption	Approx. 41 W (on high) <1 W on standby	Approx. 50 W (on high) <1 W on standby	Approx. 50 W (on high) <1 W on standby	Approx. 64-110 W
Remote control	No	No	No	Yes
Temperature range	16-26 °C	16-26 °C	16-26 °C	16-26 °C
Weight	21 kg	25 kg	26 kg	42 kg
Additional features	Common to all Energysavers: Preheat function, dual timers, manual control, electronic ignition, economy mode, air filter, overheat safety device, and child lock.			
Servicing	For reliable operation the Rinnai Energysavers should be checked by a licensed tradesperson every two years, including inspection of the flue system. If located in a particularly dusty environment or subject to excess lint, for example dog hair or where there are newly laid carpets, then annual servicing would be beneficial.			

* Remote switching kit R1347, refer appendix 3 (p. 33) for the remote wiring diagram

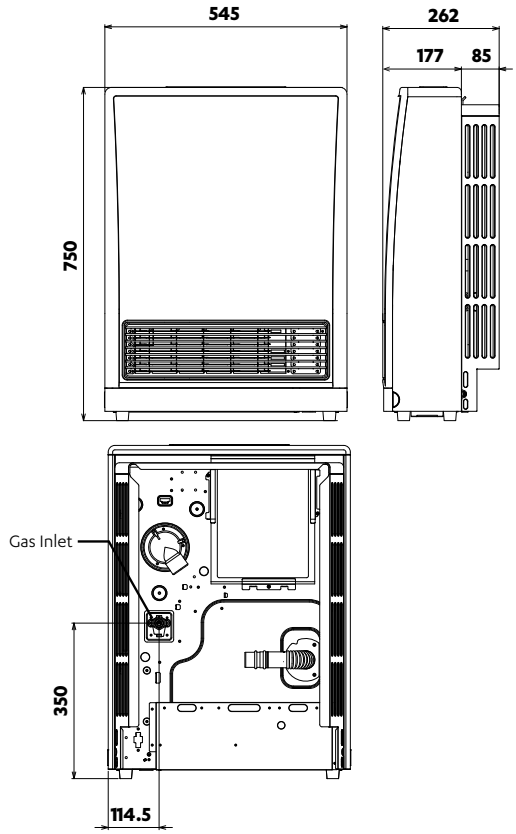
** Will vary depending on gas type and flue length

Energysaver dimensions (mm)

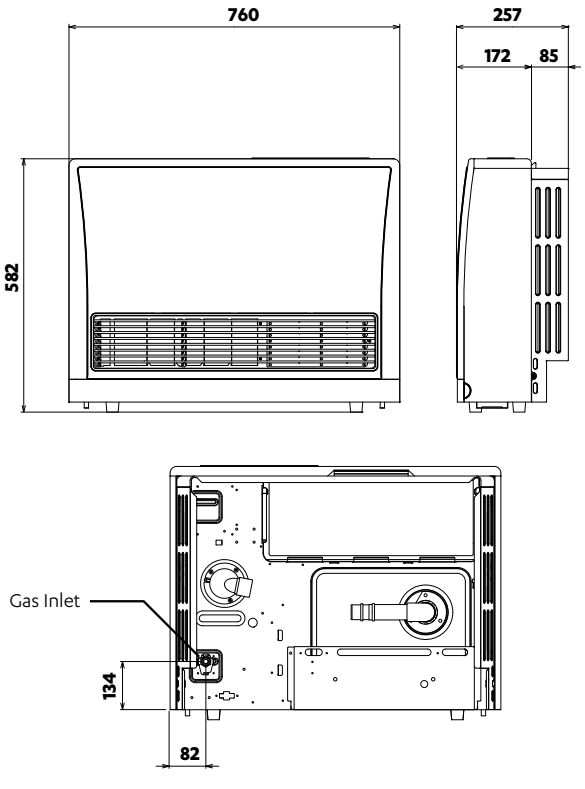
Rinnai Energysaver 309FT



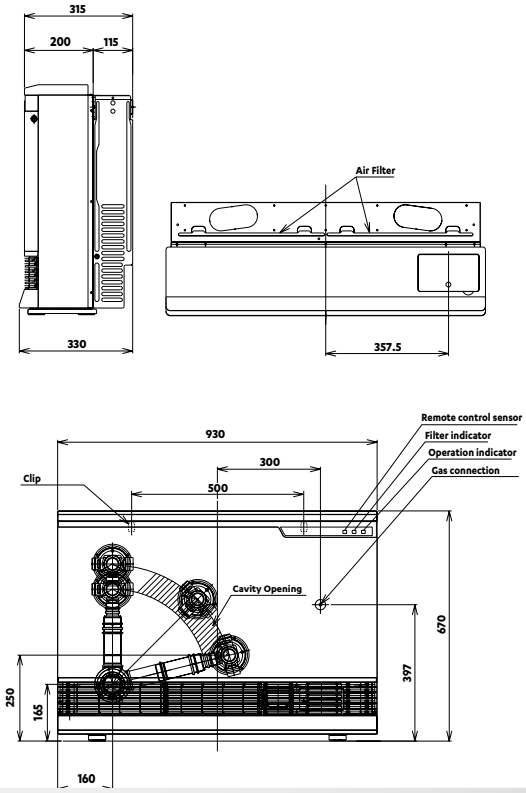
Rinnai Energysaver 561FT



Rinnai Energysaver 559FT



Rinnai Energysaver 1004FTR



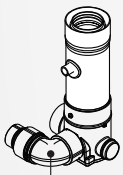
Energysaver flueing guidelines

Every Energysaver heater requires a flue system that will draw effectively and clear flue products safely under all potential wind and climatic conditions.

It is the responsibility of the installer to ensure that the appliance is provided with an effective flue. Some guidelines to assist with flue design are listed below. These must be read and modified as necessary with reference to the particular installation.

All Rinnai Energysavers must be installed with an approved Rinnai flue system. Approved flue components are detailed in this guide.

Clearance to combustibles
All Energysaver flueing components have zero clearance EXCEPT for the elbow section of the ESKIT03, and ESELBOWB. These components require a minimum clearance of 25 mm from combustible materials.



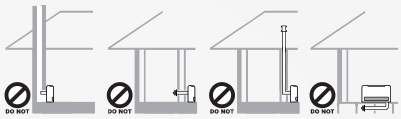
Elbow section

Condensate
A condensate trap is required for any vertical flue installations to ensure condensate generated during combustion is trapped and drained to prevent it from entering the combustion chamber.

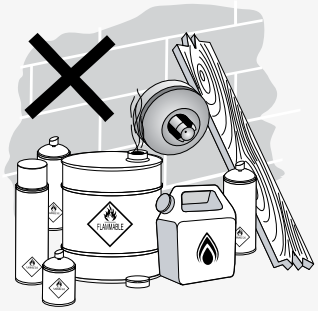
For horizontal and down and out installations there must be a continuous fall of at least 2 °. This equates to approximately 20 mm per metre to the termination point to drain condensate. For standard direct flueing, the Rinnai mushroom flue kits have an inbuilt 2 ° fall.

Flue terminal locations
Must be compliant with AS/NZS 5601.1.

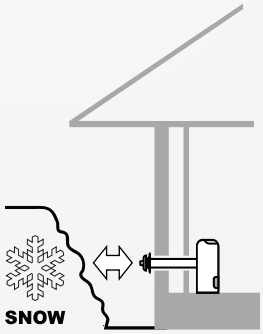
- Do not flue into natural draught flues or fireplaces.
- Do not flue into other rooms, roof spaces, or under floor spaces.



Flue terminal must be positioned away from flammable materials.



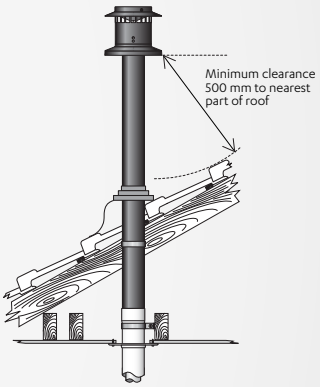
In areas subject to heavy snowfall, keep snow clear of the flue terminal at all times.



Flashings
Flashings are not part of the flue kit and must be specified.

Vertical terminations: Flue cowl clearance
To ensure products of combustion are cleared, adequate clearance from the building is required.

The flue cowl should have a 500 mm clearance from any part of the building. This also applies to steeped and pitched roofs which should be clear of the ridge line. Lesser clearances may provide perfectly adequate flue systems depending on the installation. Minimum clearances are shown in AS/NZS 5601.1.



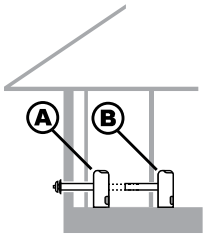
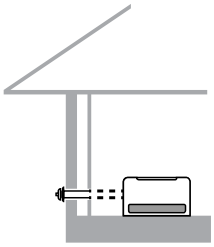
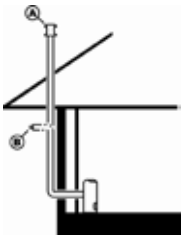
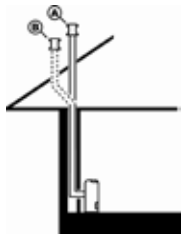
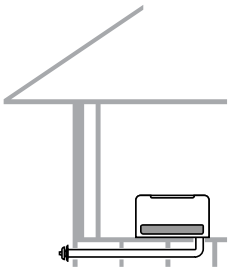
Maximum flue length and number of bends

Max. flue length	= 9 m
Max. number of bends	= 3

One 90 ° bends equals 1 m. For every 90 ° bend the overall length must be reduced by 1 m. For example, if an installation has three 90 ° bends, the maximum flue length can be 6 m.

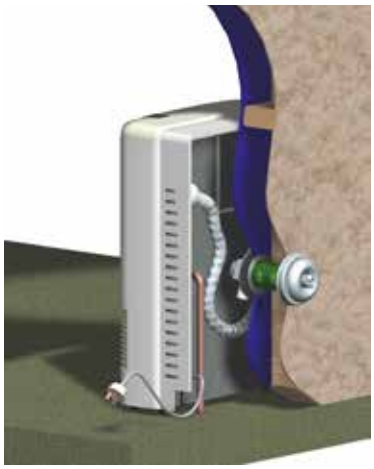
The flue transition connection for the ESKIT03 and ESELBOWB is counted as a 90 ° bend.

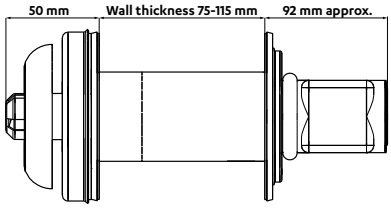
Energysaver flueing options

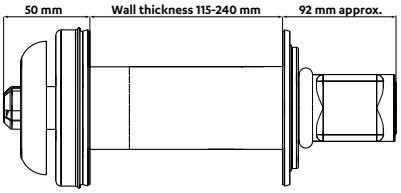
FLUEING OPTION	DESCRIPTION	FLUE COMPONENTS NEEDED
Direct and direct extended flueing		
	Direct through-the-wall flueing for walls 75-385 mm thick. Flue can be extended if wall thickness is greater than 385 mm using the ESDFK and additional lengths of ESPIPE900.	A: Direct - R1350, mushroom flue kit for walls 75-115 mm - R1351, mushroom flue kit for walls 115-240 mm - ESDFK[1], straight horiz. kit for walls up to 385 mm B: Direct extended - ESDFK[1] + ESPIPE900[2]
Horizontal (sideways extension) flueing		
	Flue runs along the left or right hand side of an internal wall behind the heater. If retrofitting the flue can be boxed in along the floor or behind a 125 mm false wall. This installation requires additional clearance off the wall—back spacer kit required.	Sideways in-wall - ESDFK[1] + ESELBOWB + ESPIPE900[2] Sideways front-of-wall - Back spacer kit (p. 16) + ESDFK[1] + ESPIPE900[2]
Through-wall (vertical extension) flueing		
	Flue runs directly from the appliance to a termination point further up the wall or vertically to a termination point on the roof. Typical installation examples for this type of flue configuration is for Energysavers installed against solid brick walls, or where there are flue clearance restrictions.	A: Vertical termination - ESDFK[1] + ESBEND[3] + ESPIPE900[2] + ESCONDK + ESROOFCOWL B: Horizontal termination - ESDFK[1] + ESBEND[3] x 2 + ESPIPE900[2] + ESCONDK
In-wall (vertical extension) flueing		
	Flue is installed within a stud wall (minimum cavity depth of 90 mm) and is run vertically. This type of installation is usually completed at the framing stage.	A: Direct ESKIT03 + ESPIPE900[2] + ESROOFCOWL B: Offset ESKIT03 + ESPIPE900[2] + ESBEND[3] x 2 + ESROOFCOWL
Down and out flueing		
	Flue runs below floor level to an external termination point (must have a continuous fall of 2 ° to drain condensate). Ideal for Energysavers that need to be located in a central position of a building. If not going in-wall, flue configuration requires additional clearance off the wall—back spacer kit required.	Down and out Back spacer kit (p. 16) + ESDFK[1] + ESPIPE900[2] + ESBEND[3] Down and out in-wall ESELBOWB + ESDFK[1] + ESBEND[3] + ESPIPE900[2] Down and out through-wall[4] ESDFK[1] + ESBEND[3] x 2 + ESPIPE900[2]

[1] Use terminal off ESDFK on outside wall
[2] ESPIPE900, order lengths as required
[3] ESBEND kit contains 2 x 45 ° bends
[4] Installation that goes out to another room and then down and out

Energysaver flue components







Direct AA mushroom flue kit

Code = R1350

For use in walls 75-115 mm thick (can be cut to size). This is a complete kit, no other components are required.

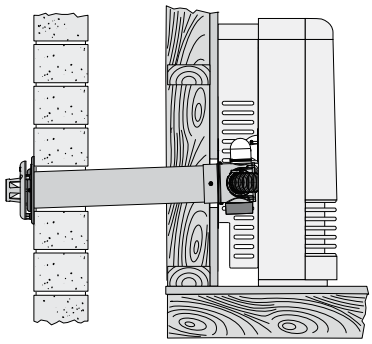
- Stainless steel
- Inbuilt 2° fall to drain condensate

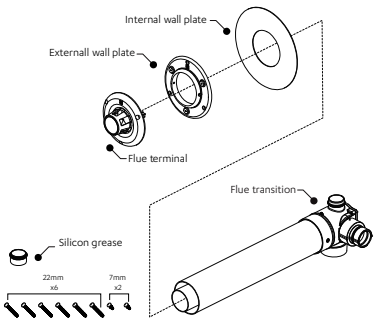
Direct A mushroom flue kit

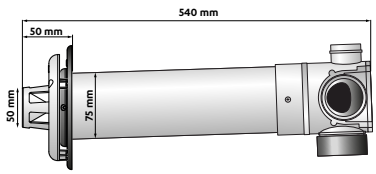
Code = R1351

For use in walls 115-240 mm thick—typically weatherboard construction (can be cut to size). This is a complete kit, no other components are required.

- Stainless steel
- Inbuilt 2° fall to drain condensate







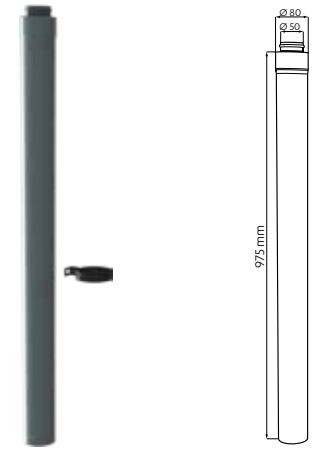
Direct flue kit

Code = ESDFK

Suitable for walls up to 385 mm. Can be cut to length to suit walls less than 385 mm thick.

Can be used in combination with ESPIPE900 for longer flueing.

Flue is aluminium, and wall plates are PVC.

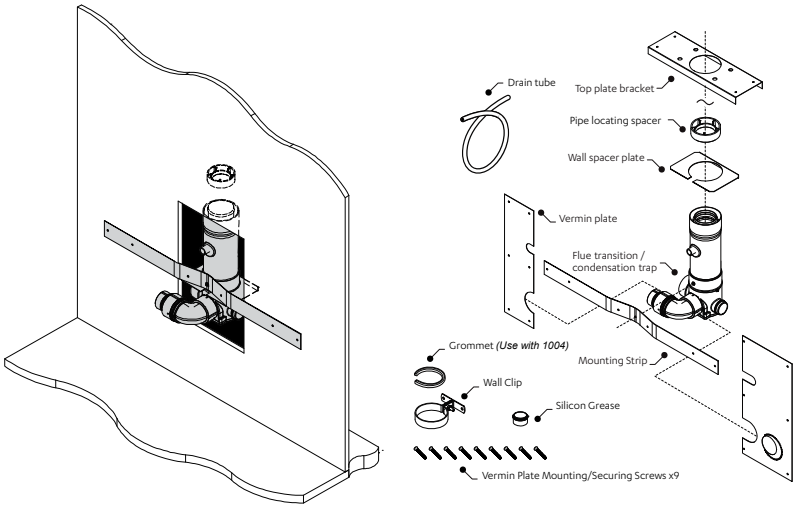


Coaxial flue pipe 900 mm

Code = ESPIPE900

Extension pipe (960 mm installed) used to construct horizontal, vertical, and downwards flueing. Can be cut to size. Inner is aluminium, and outer is PVC plastic. Comes with one wall bracket.

- O-ring for ESPIPE (4350)
- Spacer for ESPIPE (4351)

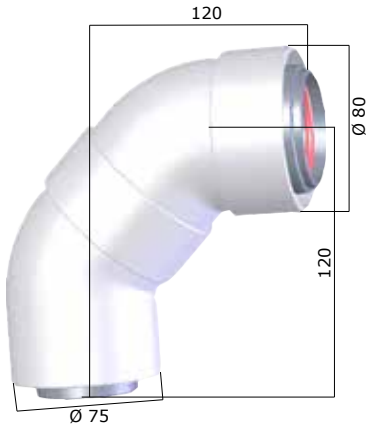


Energysaver flue adaptor kit in-wall

Code = ESKIT03

In-wall transition flue kit. Elbow section of this component requires a 25 mm clearance from combustibles, the rest is zero clearance.

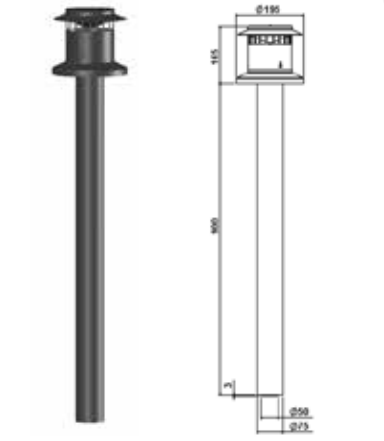
This kit includes the condensate trap.



45 ° flue bends (x2)

Code = ESBEND

Two 45 ° bends used to facilitate between horizontal, vertical, and downwards flueing. Two spacers included. Can be used separately, or together as one 90 ° bend.

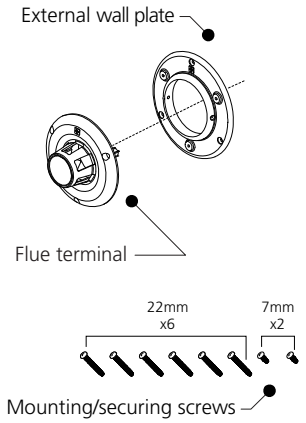


Vertical terminal

Code = ESROOFCOWL

Roof cowl and connecting pipe (960 mm installed) for termination of flue in vertical installations—can be cut to size.

Powder coated (black) galvanised construction. Approved roof penetration flashing is to be used as per relevant sections of the NZ Building Code.

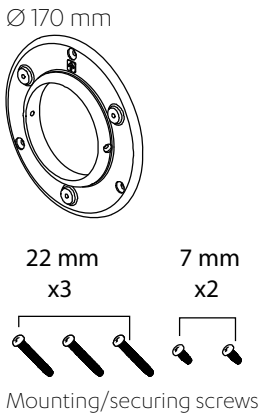


Horizontal wall terminal

Code = ESWTERM

Used to terminate the flue pipe (ESPIPE900) in horizontal flue installations when used in conjunction with ESKIT03.

Contains:
- External wall plate (black PVC)
- Flue terminal (aluminium)



External wall plate

Code = ESPLATE

Used if an extra wall cover plate is required to tidy any installation work through the wall, ceiling, or floor (black PVC).

Condensate trap

Code = ESCONDK

Required for any vertical installations to ensure condensate generated during combustion is trapped and prevented from entering the combustion chamber of the heater. Supplied with a drain tube (not pictured). Typically only needed for through-wall vertical extension flueing installations.

N.B: The condensate trap is included with the ESKIT03.

Elbow adaptor

Code = ESELBOWB

For horizontal, and down and out installations that are recessed into the wall and that DO NOT require a back spacer kit.

Requires a minimum clearance of 25 mm from combustible materials.

Steel flue guard

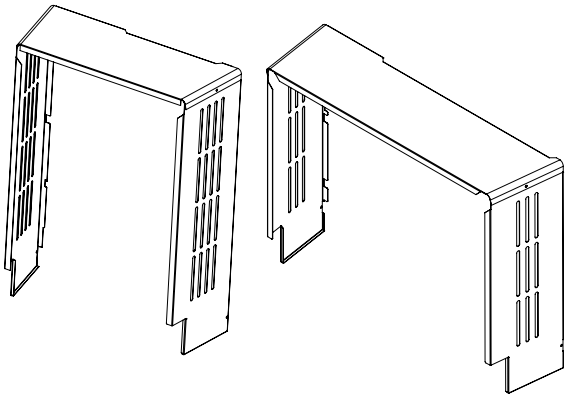
Code = R1370

Protection against hot flue gases when the flue terminates low to the ground.

Colour - warm white.

309FT Energysaver with standard rear panels

561FT Energysaver with back spacer kit

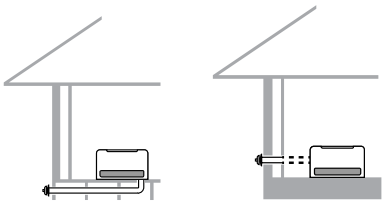


Back spacer kits

Codes:

- ESBSKD Back spacer kit for Energysaver 1004FTR
- ESBSKE Back spacer kit for Energysaver 309FT
- ESBSKF Back spacer kit for Energysaver 559FT
- ESBSKG Back spacer kit for Energysaver 561FT

The back spacer kit covers the flue elbow connection and provides the required clearances from the heater and wall in down and out, and sideways (front-of-wall) horizontal flueing installations.



The back spacer kit is used INSTEAD of the rear panels supplied with each Energysaver and adds approximately 115 mm of additional depth (standard rear panel = 85 mm, back spacer panel = 200 mm).

Back spacer kit contents:

- Left spacer panel
- Right spacer panel
- Top spacer panel
- Flue elbow connection
- Plastic edging seal

The plastic edging seal is used to provide a protective edge around the flue pipe cut-out in the side spacer panel (front-of-wall horizontal flue installations only).

Portable Convectors (unflued)

Rinnai Portable Convector codes

Gas Type	Dynamo	Avenger
NG	RCE471TRWHN	RCE671TRWHN
LPG	RCE471TRWHL	RCE671TRWHL

Description

Portable unflued (connected to gas supply via a wall or floor socket) fan convector heater supported by electronic timers and controls. Operated via remote or touch pad on top of the unit.

Suitability

Portable Convectors are unflued appliances and are not suitable for; bedrooms, bathrooms, toilets, saunas, spa rooms, or hallways. Rinnai Portable Convectors draw the air for combustion from the room, so there is a need for adequate ventilation. This ventilation must be provided as per the Gas Regulations—the gasfitter installing the heater is responsible for this.

Dynamo

Domestic heating appliance, suitable for smaller areas. Can heat up to 51.5 m² (depending on geographical location). This heater must not be installed in a room smaller than 37.5 m³

Avenger

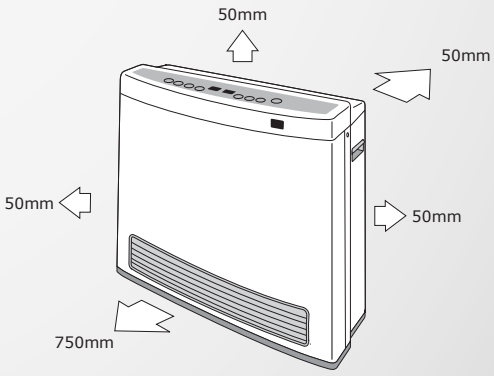
Domestic and commercial heating appliance, suitable for open plan areas. Can heat up to 95 m² (depending on geographical location). This heater must not be installed in a room smaller than 62.5 m³.

Room sizing is important. Portable convectors modulate to a low setting, but do not turn off. It is important that the room is of sufficient size that it will not overheat when the heater is on low. Refer appendix 2 (p. 32) to determine how to calculate if the intended room size meets the minimum room size requirements.

Positioning considerations

Portable Convectors must not be installed where curtains or other combustible materials could come into contact with it. In some cases curtains may need restraining. Portable Convectors are not designed to be built in and are subject to the clearances shown.

The power outlet MUST BE to the side of the heater and not above. The heater comes with a 1.5 m power cord.



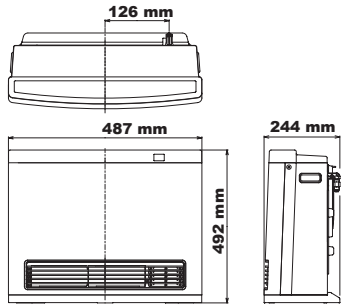
Portable Convector specification summary

	Dynamo RCE471	Avenger RCE671
Colour	White with grey louvres	White with grey louvres
Efficiency*	100%	100%
Energy star rating	5.8 star energy equivalent	5.8 star energy equivalent
Gas connection	⅜ " MI BSP into 1.5 metre flexible gas hose with bayonet connection	⅜ " MI BSP into 1.5 metre flexible gas hose with bayonet connection
Heating area:		
- warm zone	51.5 m²	95 m²
- medium zone	45 m²	80 m²
- cool zone	38 m²	70 m²
Minimum room size	37.5 m^3	62.5 m^3
Input	6-15 MJ/h	8.5-25 MJ/h
Output**	1.7-4.2 kW	2.4-6.2 kW
Noise level	40 dB(A)	41 dB(A)
Power consumption	16-21 W, standby < 0.8 W	16.5-27.5 W, standby < 0.8 W
Power cord	Located lower right hand side of rear panel	Located lower right hand side of rear panel
Remote control	Yes	Yes
Temperature range	16-26 °C	16-26 °C
Weight	10 kg	12 kg
Additional features	Common to both models: Preheat function, dual timers, manual control, electronic ignition, economy mode, air filter, overheat safety device, and child lock.	
Servicing	For reliable operation Rinnai Portable Convectors should be checked by a licensed tradesperson every two years. If located in a particularly dusty environment or subject to excess lint, for example dog hair or where there are newly laid carpets, then annual servicing would be beneficial.	

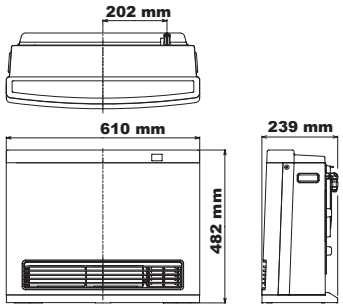
* Unflued appliance

** Will vary depending on gas type

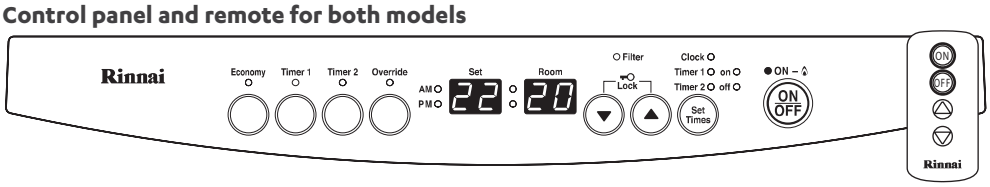
Dimensions - Dynamo



Dimensions - Avenger



Control panel and remote for both models



Portable Convector accessories

Wall socket stainless steel

Code = R2580WS

Flush wall socket stainless steel finish.

Wall socket stainless steel

Code = R2580WW

Flush wall socket white finish.

Gas bayonet socket

Code = R2588S

Floor or wall socket—chrome finish.

Mushroom hose 10 mm

Code = R2586HM

Flexible connection hose (10 mm) to fit into a gas wall or floor socket. Typically used to replace yellowing or aged connection hoses in existing installations.

Super Rays

Rinnai Super Ray codes

Gas Type	Indoor Super Ray 16		Indoor Super Ray 24		Indoor Super Ray 40		Outdoor Super Ray
	Electronic	Manual	Electronic	Manual	Electronic	Manual	Manual only
NG	WEA16N	WMA16N	WEA24N	WMA24N	WEA40N	WMA40N	ODHRAD3MN
LPG	WEA16L	WMA16L	WEA24L	WMA24L	WEA40L	WMA40L	ODHRAD3ML

Electronic/manual refers to how the unit is switched on. Electronic uses a switch and manual uses a pull-cord.

Description

Rinnai's infra-red wall-mounted, semi-industrial Super Ray heaters provide efficient spot heating. Unaffected by external air currents, the heat is channelled to specific areas.

Suitability: Indoor Super Rays

Commercial and industrial use only. The heaters can be used for either spot or total heating, depending on the requirement of the application. They are not suitable for indoor domestic use.

- WEA (electronic models) are not suitable for outdoor use
- WMA models can be installed in covered, sheltered outdoor areas, but must be protected against direct exposure to wind, rain, and salt spray

Suitability: Outdoor Super Ray

- Domestic use, outdoor only—refer appendix 4 (p. 34) for the definition of an outdoor area
- Commercial use, outdoor and indoor[1] (appliance must not be used in a room smaller than 120 m^3)

Not recommended for locations directly near the sea.

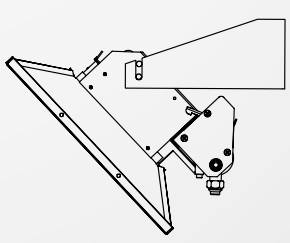
[1] For indoor use, these appliances must be used in a well ventilated area. Ventilation requirements must comply with AS/NZS 5601.1.

Positioning considerations

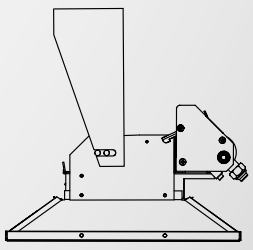
Super Ray heaters direct their heat via infra-red rays which discharge the heat energy upon striking a surface. They do not pass through solid materials. From a heating and a safety point of view, when installing the units, obstructions to the path of the rays must be taken into consideration. Obstructions in the path of the rays should be avoided where possible.

Materials stored near the heater must be at a safe distance as the infra-red rays heat solid objects quickly—refer p. 22 for clearance information.

For safe operation the mounting bracket of the Super Ray is designed so the heater is mounted at an angle. The bracket must not be altered/adjusted, or another bracket substituted to alter this angle.



Super Ray is mounted correctly with the supplied bracket and bracket installed as per instructions.



Super Ray is mounted incorrectly and bracket has been modified so the heater angles directly downwards.

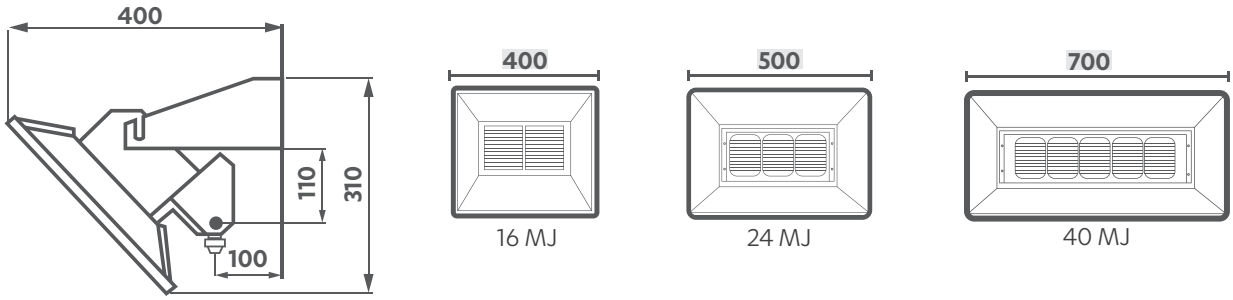
Super Ray specification summary

	Indoor Super Ray 16	Indoor Super Ray 24	Indoor Super Ray 40	Outdoor Super Ray
Efficiency*	100%	100%	100%	100%
Gas connection:**				
- NG	½ " (12.7 mm) copper flare union	½ " (12.7 mm) copper flare union	½ " (12.7 mm) copper flare union	½ " (12.7 mm) copper flare union
- LPG	⅜ " (9.52 mm) copper flare union	⅜ " (9.52 mm) copper flare union	⅜ " (9.52 mm) copper flare union	⅜ " (9.52 mm) copper flare union
Heating area:				
- warm zone	19 m²	28 m²	47 m²	23 m²
- medium zone	19 m²	28 m²	47 m²	23 m²
- cool zone	19 m²	28 m²	47 m²	23 m²
Input	16 MJ/h	24 MJ/h	40 MJ/h	24 MJ/h
Output	4.4 kW	6.6 kW	11.1 kW	6.6 kW
Servicing	For reliable operation Rinnai Super Ray heaters should be checked by a licensed tradesperson every two years, If they are heavily used annual servicing would be beneficial. Regular servicing is not covered by the Rinnai warranty.			
Weight	5.6 kg	6 kg	7 kg	10 kg

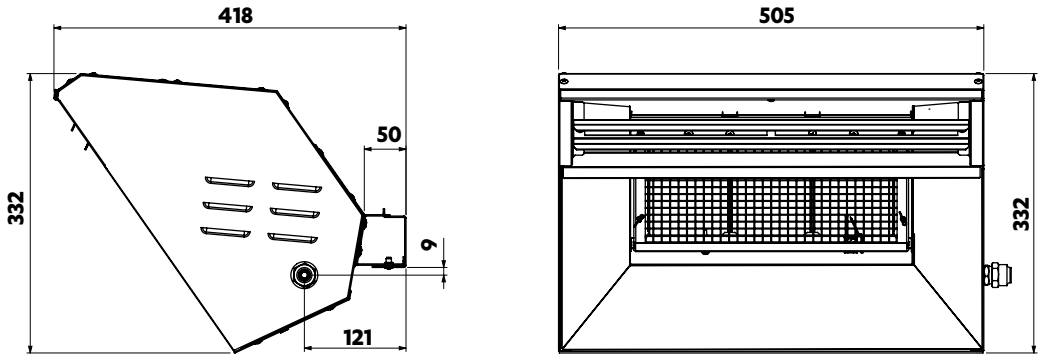
* Unflued appliance

** A manual isolating valve must be fitted and the unit must be connected to a correctly sized gas supply

Dimensions: Indoor Super Ray (mm)



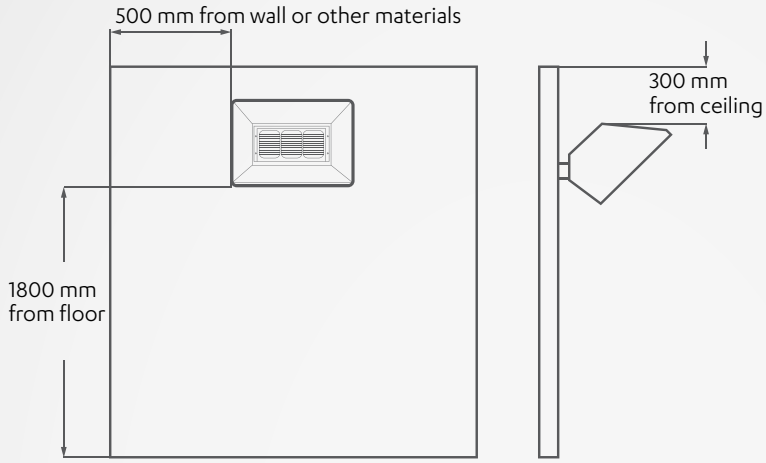
Dimensions: Outdoor Super Ray (mm)



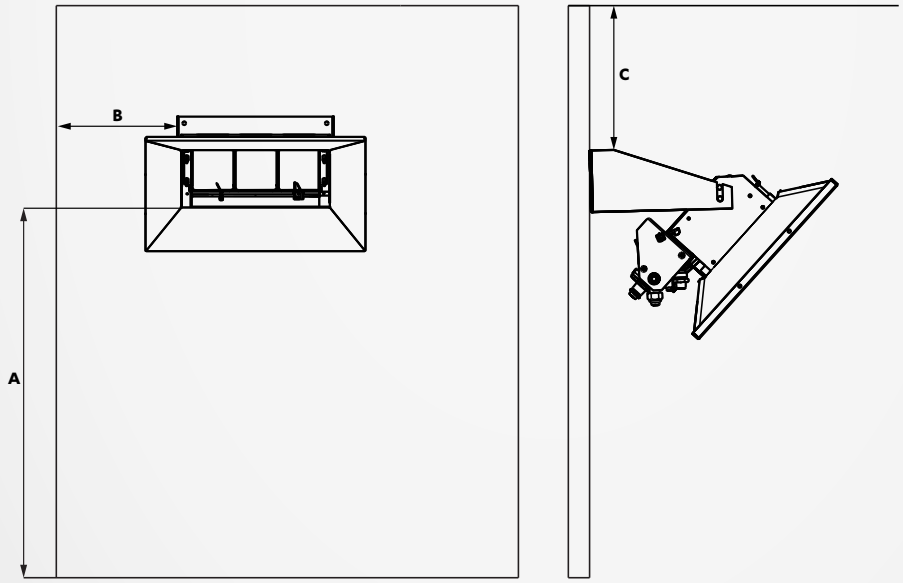
Super Ray clearance information

It is critical to the safe operation of this appliance that the clearances are maintained so the heater does not become a fire hazard. The Super Ray heaters discharge products of combustion from the top of the unit which could cause damage or discolouration to the ceiling if the ceiling clearances are not maintained.

Outdoor Super Ray

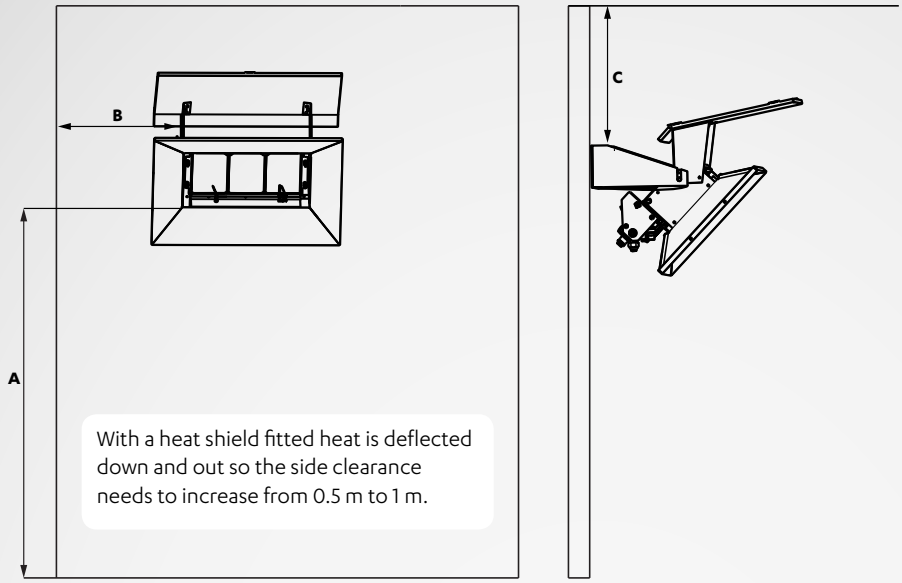


Indoor Super Ray WITHOUT a heat shield



		WMA/WEA 16	WMA/WEA 24	WMA/WEA 40
A	Approximate height from floor to bottom of burner (Rinnai recommend)	2.5 m	2.7 m	3.4 m
B	Side clearance from mounting bracket	0.5 m	0.5 m	0.5 m
C	Ceiling clearance from top of mounting bracket	1.0 m	1.1 m	1.1 m

Indoor Super Ray WITH a heat shield

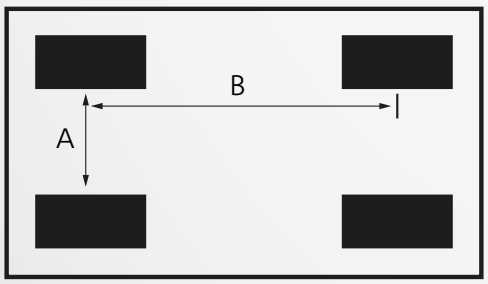


		WMA/WEA 16	WMA/WEA 24	WMA/WEA 40
A	Approximate height from floor to bottom of burner (Rinnai recommend)	2.5 m	2.7 m	3.4 m
B	Side clearance from mounting bracket	1.0 m	1.0 m	1.0 m
C	Ceiling clearance from top of mounting bracket	0.5 m	0.5 m	0.6 m

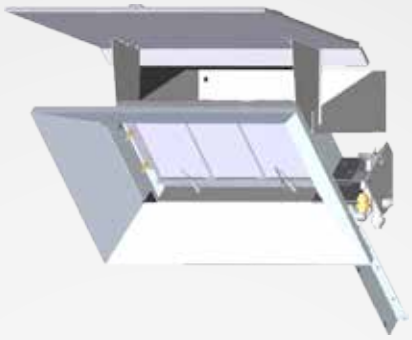
Multiple heater positioning for total area heating

Heaters can be positioned side by side or facing each other as long as the following distances are maintained. The table below shows approximate positioning for total area heating

	WMA/WEA 16	WMA/WEA 24	WMA/WEA 40
A. Facing each other	8.0 m	9.8 m	15.0 m
B. Side by side	6.1 m	7.3 m	9.0 m



Indoor Super Ray accessories: Heat shield



Rinnai Indoor Super Ray heat shield codes

Indoor Super Ray 16	Indoor Super Ray 24	Indoor Super Ray 40
WHS16	WHS24	WHS40

Description

Constructed from stainless steel and heat resistant insulator board, the Rinnai Super Ray heat shield acts as a deflector and insulator when fitted to an Indoor Super Ray heater. This has the benefit of reducing ceiling clearances, giving the owner flexibility about where the Super Ray heater can be positioned.

For example:

- **Super Ray 16**
  Standard ceiling clearance is 1 m, with the heat shield this could reduce to 0.5 m.

- **Super Ray 24 and 40**
  Standard ceiling clearance is 1.1 m, with the heat shield this could reduce to 0.6 m.

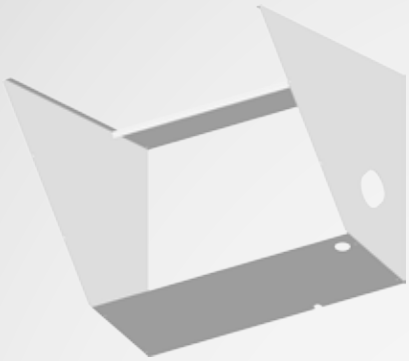
Please note:
Due to heat being deflected down and out, the side clearances need to increase from 0.5 m to 1.0 m.

Suitability

All Rinnai Indoor Super Ray (WMA/WEA) radiant heaters. Heat shield must be fitted to the Super Ray prior to installation.

Not suitable for Outdoor Super Ray models as these already have an in-built heat shield.

Indoor Super Ray accessories: Deluxe surround



Rinnai Indoor Super Ray deluxe surround codes

Indoor Super Ray 16	Indoor Super Ray 24	Indoor Super Ray 40
R1446	R1447	R1448

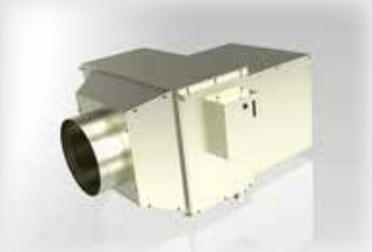
Description

Designed as an aesthetic cover for the Indoor Super Ray heaters to make them look less industrial. Typically used in restaurants where overall design is important.

Suitability

All Rinnai Indoor Super Ray (WMA/WEA) radiant heaters. The deluxe surround fits onto the back of the appliance. Designed for indoor use only—surround does not water proof the unit.

Rinnai iHeat



Rinnai iHeat central heating code

RAHU20

Description

The Rinnai iHeat is a ducted home heating system that uses hot water from the Rinnai INFINITY continuous flow gas hot water heater to warm air and circulate it around the home. The Rinnai iHeat is controlled via a wall thermostat that has three fan speed settings and can be programmed to run on timers.

How it works

The Rinnai INFINITY continuous flow gas hot water heater provides hot water to the iHeat air handler unit (heat exchanger). The heat exchanger extracts the heat from the hot water and transfers it to a steady stream of air. This air is fed into the ducting system and is distributed into each room. Water is returned to the Rinnai INFINITY for reheating.

Suitability

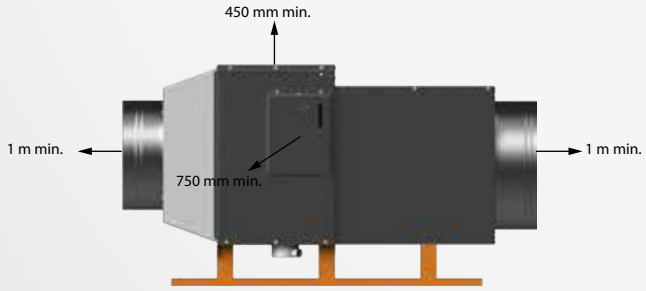
The Rinnai iHeat may be retrofitted to any home with an existing Rinnai INFINITY continuous flow water heater, or both units can be installed simultaneously.

Hard or acidic water will need to be treated to use this appliance.

Positioning considerations

The Rinnai iHeat can be installed in the ceiling space or under the floor—subject to the clearances shown. It must not be mounted in areas subject to direct splashing—this is relevant to underfloor installations that could be exposed to water. The unit cannot be positioned outside.

Prior to purchase of a Rinnai iHeat a customer site visit is required to ensure the correct system is specified and that the Rinnai iHeat can be successfully installed.



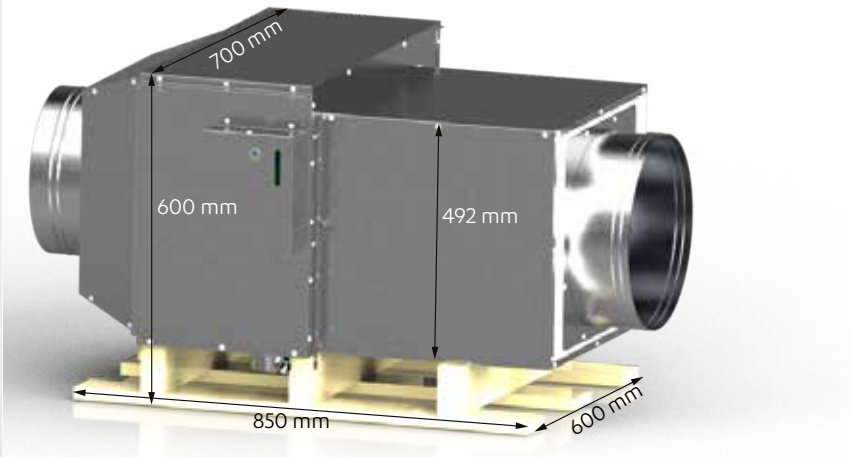
Important

The Rinnai iHeat warranty only applies to systems installed by listed installers—installers who have completed the Rinnai iHeat online specifying and installation courses. For listed installers refer to www.rinnai.co.nz/iheatinstallers.html.

Rinnai iHeat specification summary

	Rinnai iHeat
Energy efficiency	Approximately the same as the Rinnai INFINITY—over 80% depending on the Rinnai INFINITY model and ducting used.
Heating area:	Warm zone: 333 m², medium zone: 285 m², cool zone: 250 m² The heating area in each house will vary due to amount of insulation, number and size of widows, floor structure etc.
Minimum pipe size	This is CRITICAL to the successful performance of the central heating system. Use 20mm pipe able to withstand 85 °C such as; Kembla Pex black 20 mm or REHAU RAUTITAN platinum 20 mm or equivalent.
Noise level: Fan	Fan: 40-50 dB(A) From various charts on the Internet 40 dB(A) is the same as standing 1.5 m away from a refrigerator. N.B: If the system is balanced properly the fan noise will be negligible.
Noise level: Rinnai INFINITY	50 dB(A) approximately
Number of outlets	3-12, each outlet provides approximately 1.8 kW
Nominal electrical consumption (does not include the Rinnai INFINITY)	• Heating fan Hi: 710 W • Heating fan Lo: 300 W • Air circulation fan Hi: 580 W • Air circulation fan Lo: 165 W
Power output	Nominal 20 kW, maximum 25 kW (depending on installation). Power output of fan is 0.6 kW.
Return air intake	Return air filter is mandatory, minimum size is 1500 cm²
Spigot size	Supply air: 300 mm ID, return air: 350 mm ID
Weight	Total shipped weight approximately 56.4 kg
Servicing	For reliable operation the Rinnai iHeat and Rinnai INFINITY unit should be serviced annually. Regular maintenance and servicing is not covered by the Rinnai warranty.

Dimensions



- Approximate end-to-end measurement = 1135 mm
- Total height of unit with suspended mounting kit = 910 mm
- Total width of unit is 790 mm—this includes the control box

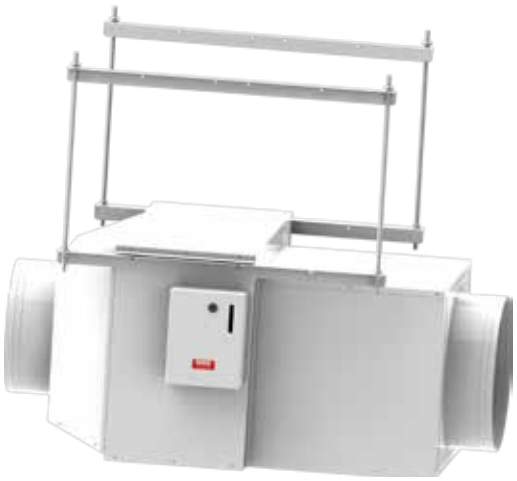
Rinnai iHeat accessories

Rinnai iHeat fittings kit

Code = R5046

Designed to simplify and speed up the iHeat installation process and to fit within the Rinnai INFINITY pipe cover. Includes:

- Nipple 20 mm hex crox 30 mm
- Connector T 20 mm
- Nipple non-return
- Nipple tapered
- Expansion valve H704
- Tempering valve heat
- Hose braided elbow
- Nipple tapered crox parallel
- Nipple tapered parallel
- Socket M&F crox ext 20 mm



Rinnai iHeat suspended mount kit

Code = R5044

Mount kit to suspend the Rinnai iHeat from roof trusses or floor joists. Includes:

- Mounting brackets
- Threaded rods
- Galvanised nuts
- Flat washers
- Spring washers

Rinnai heating

Appendices

Appendix 1: Running costs

Running costs can play an important part in the purchase decision. Based on the information in the table below, calculate for yourself the approximate running cost of a Rinnai appliance, and approximate hours a 45 kg LPG bottle will last.

Rinnai appliance		Gas consumption (MJ/H)		Energy output (kW/h)		45 kg bottle will last (hrs)		Running costs per hour ($)			
								LPG		Natural Gas	
								$97 per 45 kg		$0.08 per kWh	
Energysavers		**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**
	Energysaver 309FT	5.80	13.00	1.20	3.10	391	174	0.25	0.56	0.10	0.23
	Energysaver 561FT	9.00	21.00	1.90	4.80	252	108	0.39	0.90	0.16	0.37
	Energysaver 559FT	9.00	23.00	1.90	5.30	252	99	0.39	0.99	0.16	0.40
	Energysaver 1004FTR	11.00	37.00	11.00	37.00	206	61	0.47	1.59	0.20	0.65
Gas fireplaces											
	Arriva 750 and 752	8.00	31.50	1.80	7.00	284	72	0.34	1.35	0.14	0.55
	Compact 2 / Timberflame Compact	9.00	25.00	1.60	5.00	252	91	0.39	1.08	0.16	0.44
	Neo on NG	14.00	27.00	2.98	6.04	-	-	-	-	0.25	0.47
	Neo on LPG	14.00	30.00	3.24	6.94	162	76	0.60	1.29	-	-
	Symmetry RDV3611	19.00	33.00	3.80	7.50	119	69	0.82	1.42	0.33	0.58
	Timberflame Radius ETR	8.00	33.00	1.80	6.50	284	69	0.34	1.42	0.14	0.58
Portable convectors											
	Dynamo	6.00	15.00	1.70	4.20	378	151	0.26	0.65	0.11	0.26
	Avenger	8.50	25.00	2.40	6.20	267	91	0.37	1.08	0.15	0.44
SUPER RAYS											
	Indoor Super Ray 16	-	16.00	-	4.4	-	142	-	0.69	-	0.28
	Indoor Super Ray 24	-	24.00	-	6.6	-	95	-	1.03	-	0.42
	Indoor Super Ray 40	-	40.00	-	11.1	-	57	-	1.72	-	0.70
	Outdoor Super Ray	-	24.00	-	6.6	-	95	-	1.03	-	0.42

Running cost scenario: Energysaver 559FT

During the cooler months the Energysaver runs for approximately two hours in the morning and three hours in the evening. This equates to approximately five hours use everyday.

- Approx. weekly cost on Natural Gas: $5.60-$14 (low to high)
- Approx. weekly cost on LPG: $14-$35 (low to high)

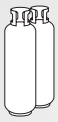
This table is meant as a guide only. Please refer to the notes regarding running cost assumptions and how values have been calculated. Always double check figures based on your own use. Please note: All Rinnai appliances, excluding the manual Super Rays require electricity to run—electricity costs have not been factored into the hourly running costs.

Rinnai iHeat running costs

Running costs for the Rinnai iHeat are still being collated as we are trying to base the information on 'real' installations around the country. Once the information has been finalised it will be loaded on the Rinnai website—refer to the iHeat product within the heaters category on www.rinnai.co.nz.

Running cost assumptions and calculations

LPG gas bottle energy calculation



1 kg of LPG gas contains 50.4 MJ of energy

1 kW = 3.6 MJ

This means that a 45 kg LPG bottle has 2268 MJ (45 kg x 50.4 MJ)

LPG and Natural Gas costs

Natural Gas costs are based on the Genesis Energy Auckland lifestyle plan as at 11 March 2013 (6.63c/kWh) including GST, a 10% prompt payment discount, and excluding the fixed line charge.

LPG costs are based on the Genesis Energy Auckland standard charges ($96.53 per 45 kg bottle refill and standard delivery), including GST, and excluding LPG annual bottle rental, and excluding electricity running costs. The LPG cylinder cost has been rounded up to $97

The cost of LPG and Natural Gas will differ in each area, please check with your local supplier. The cost of cylinder rental, line charges and other variables are not included in the running costs.

Calculating your own running costs

To calculate running costs on LPG:

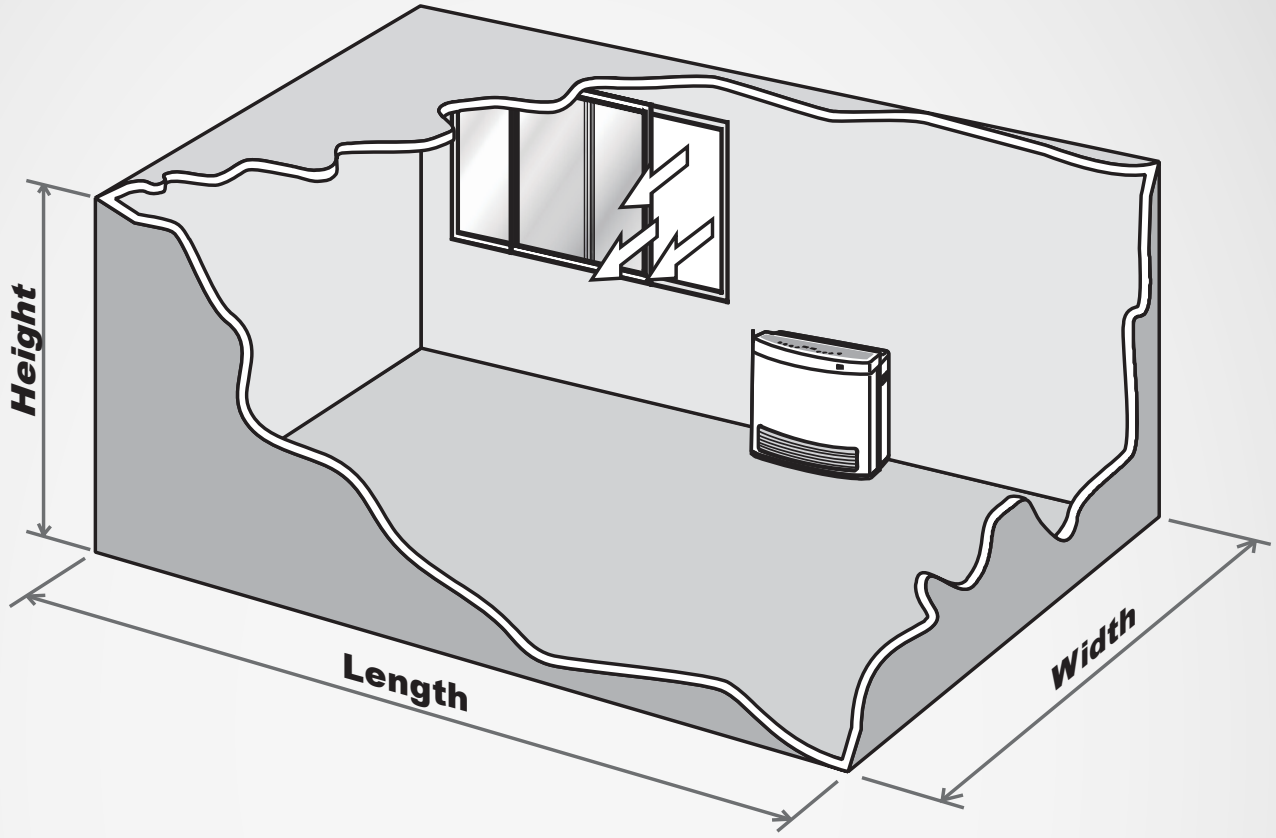
1. Calculate the cost of gas per MJ/h, for example; $97 ÷ 2268 MJ = $0.043 per MJ/h
2. Calculate the approximate running cost per hour, for example; $0.043 x 5.80 MJ/h = $0.25 per hour

To calculate running costs on Natural Gas:

1. Convert the MJ input of the appliance to kW, for example; 5.80 MJ/h = 1.61 kW/h
2. Calculate the approximate running cost per hour, for example; $0.063 x 1.61 kW/h = $0.10 per hour

Appendix 2: Calculating the minimum room size

Unflued heaters must not be installed in rooms smaller than specified (refer to product specification page). To determine if the intended room meets the minimum size requirement multiply the height x width x length of the room.

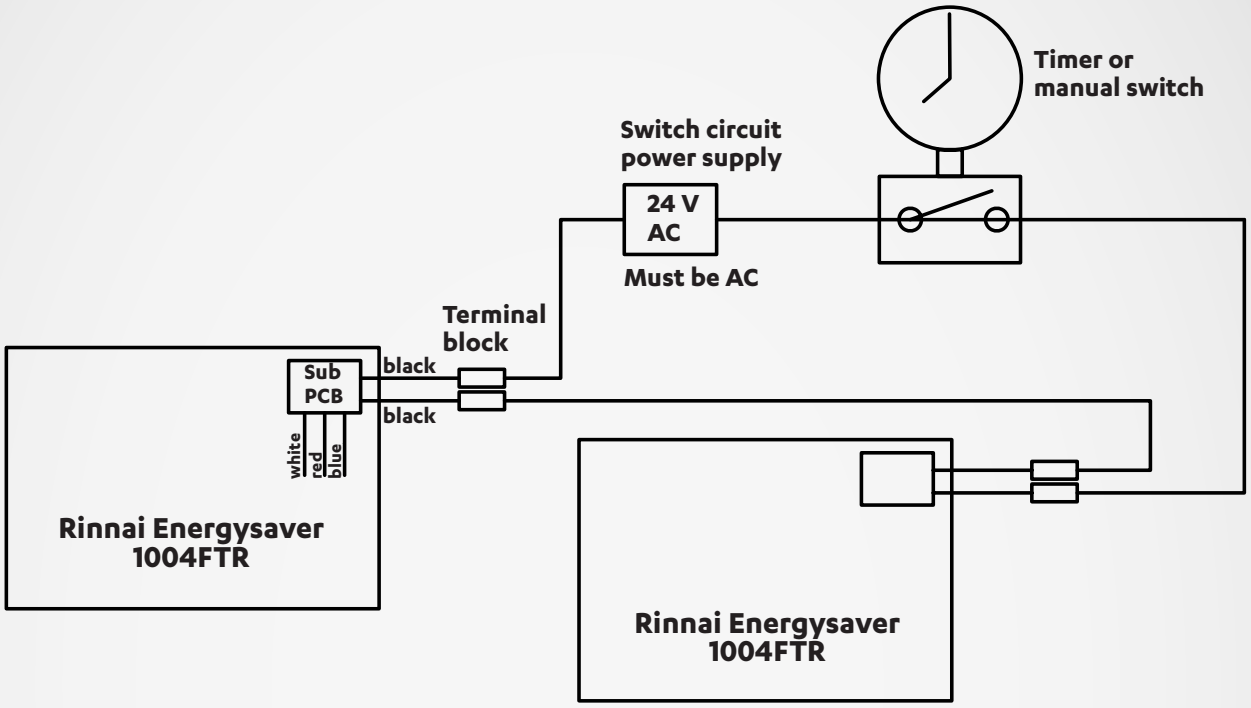


Example

If the room dimensions are 5.3 m (length), width 5 m, and height 2.4 m then the volume would be 63.6 m^3 and suitable for use with an Avenger RCE671 (minimum room size of 62.5 m^3).

Appendix 3: Energysaver 1004FTR remote wiring diagram

Remote switching kit: R1347. Rinnai does not supply the timers or transformers.



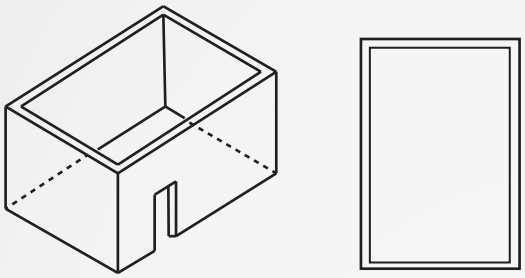
When a 24 Volt AC supply is applied to the sub-PCBs the appliances will turn on. When the 24 Volt AC power supply is disconnected appliances will turn off.

Appendix 4: Definition of an outdoor area

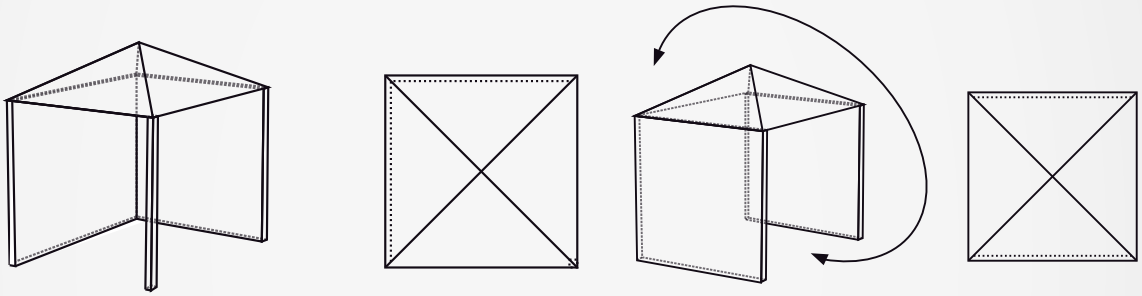
This appliance shall only be used in an above ground open air situation with natural ventilation, without stagnant areas, and where gas leakage and products of combustion are rapidly dispersed by wind and natural convection.

Any enclosure in which the appliance is used shall comply with one of the following:

- With walls on all sides, but at least one permanent opening at ground level, and no overheard cover

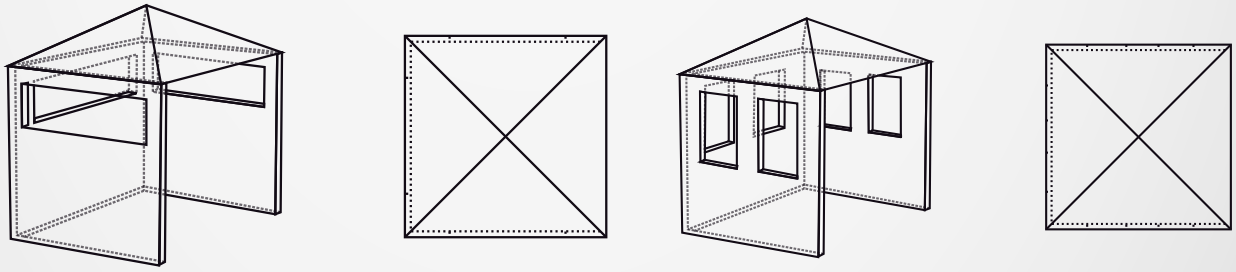


- With a partial enclosure that includes an overhead cover and no more than two walls



- Within a partial enclosure that includes an overhead cover and more than two walls, the following shall apply:

  - at least 25% of the total wall area is completely open
  - at least 30% of the remaining wall area is open and unrestricted



In the case of balconies, at least 20% of the total wall area shall be and remain open and unrestricted.

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http://www.youtube.com/rinnainz